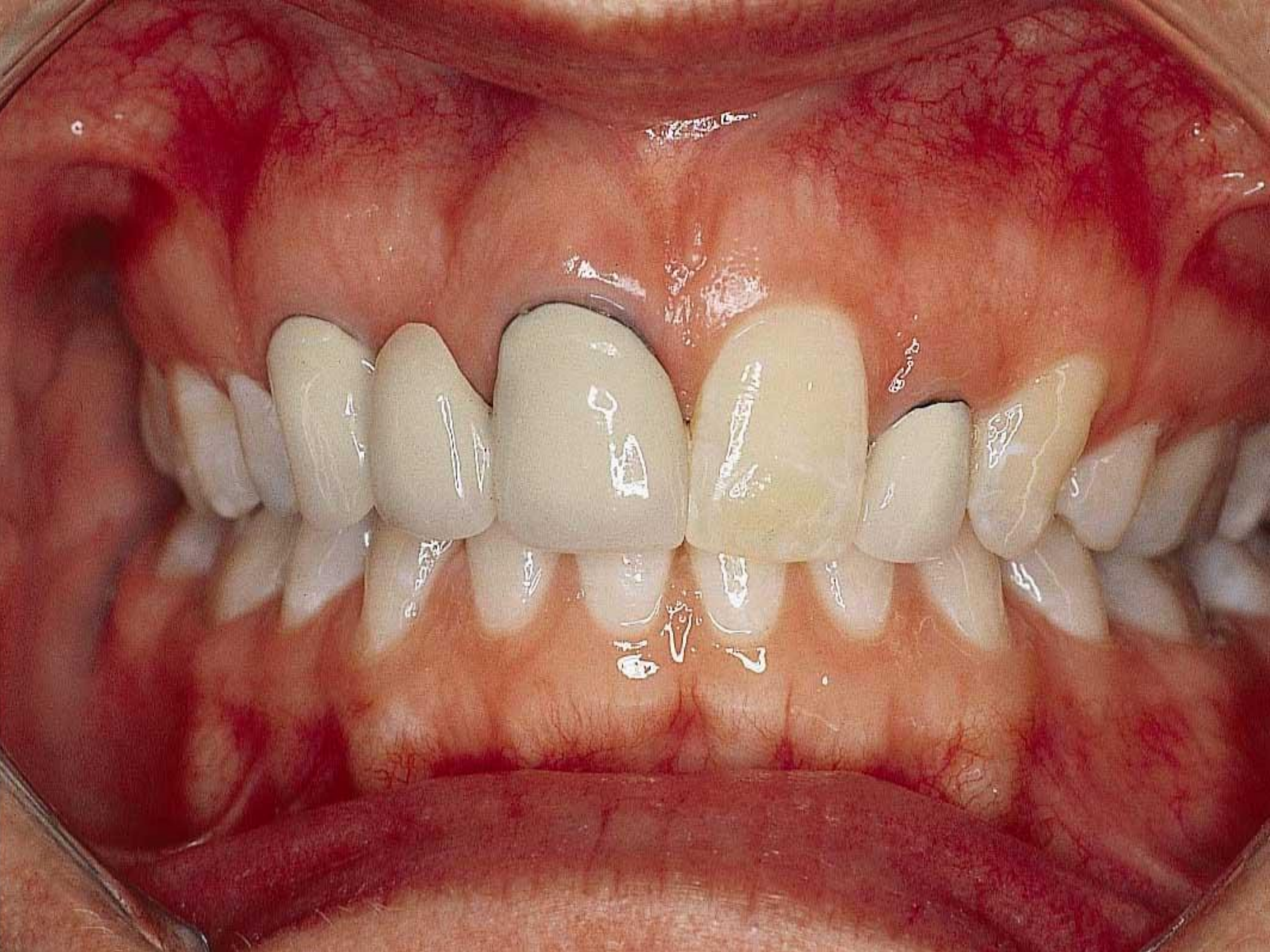
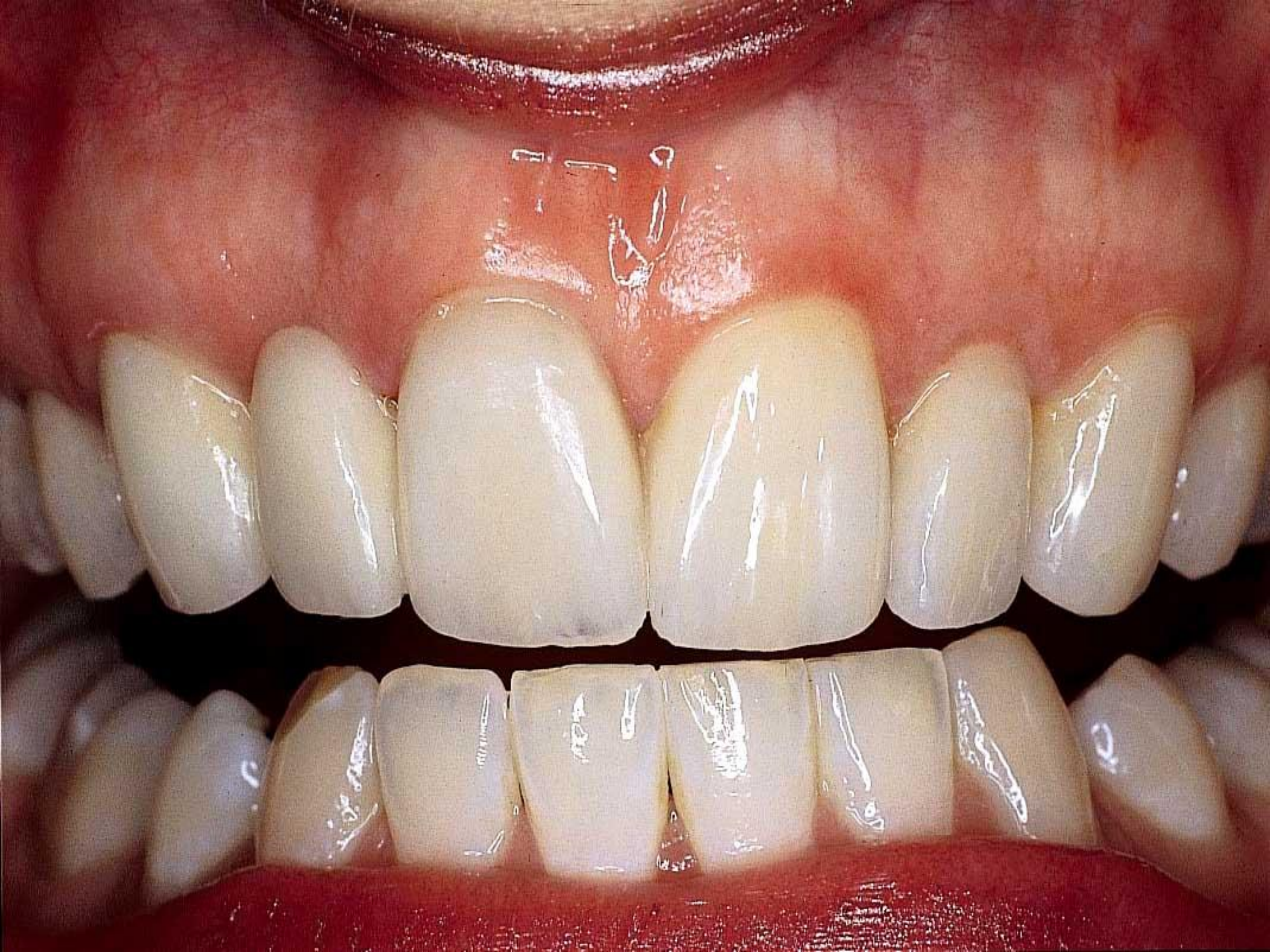
بسم الله الرحمن الرحيم

Tooth preparation for all ceramic restoration





ADVANTAGES

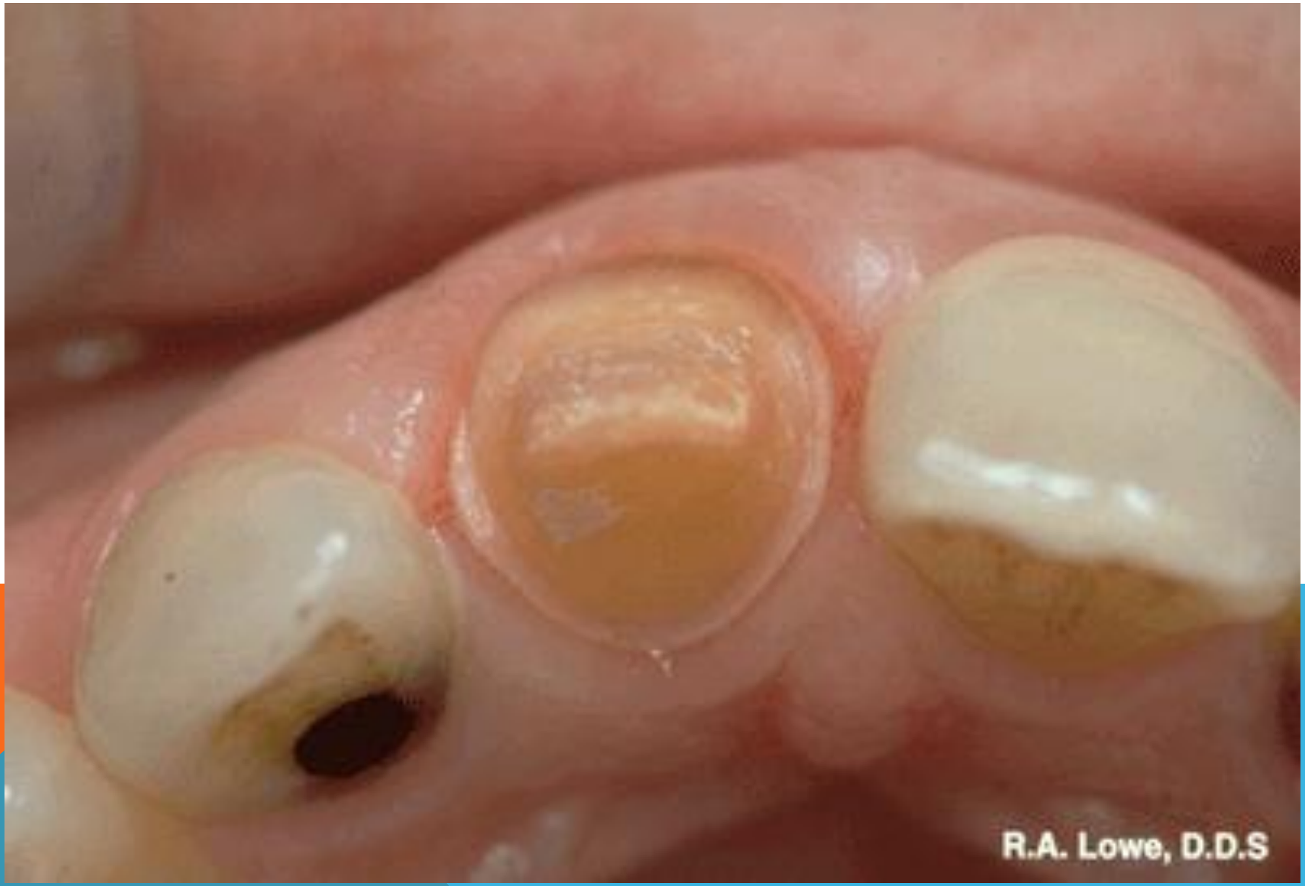
1. Superior esthetic.
2. Excellent translucency.
3. Good tissue response.
4. More conservative to tooth structure at the facial surface than the metal ceramic crown due to lack of metal substructure

5. The appearance of the completed restoration can be modified by selecting different colors of luting agent. However, changing cement color under restorations that rely on an opaque core for strength, such as In-Ceram, will be ineffective.

DISADVANTAGES

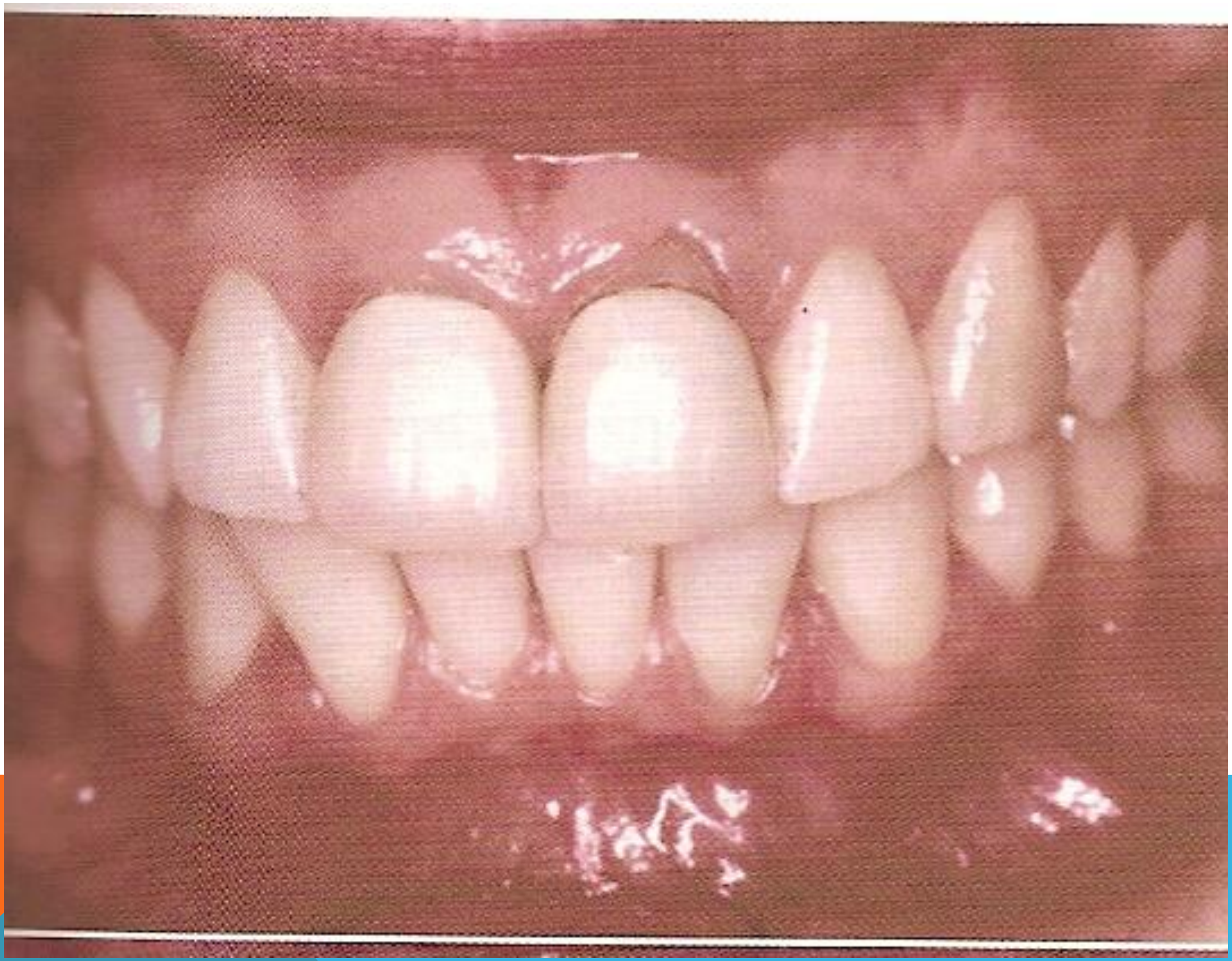
1- Reduced strength than metal-ceramic crowns. some types have high strength and could be used as 3 units FPDs such as : Inceram Zirconia , IPS Empress Zirconia ceramics and Lava ceramics

2- less conservative to tooth structure than other types of restorations.



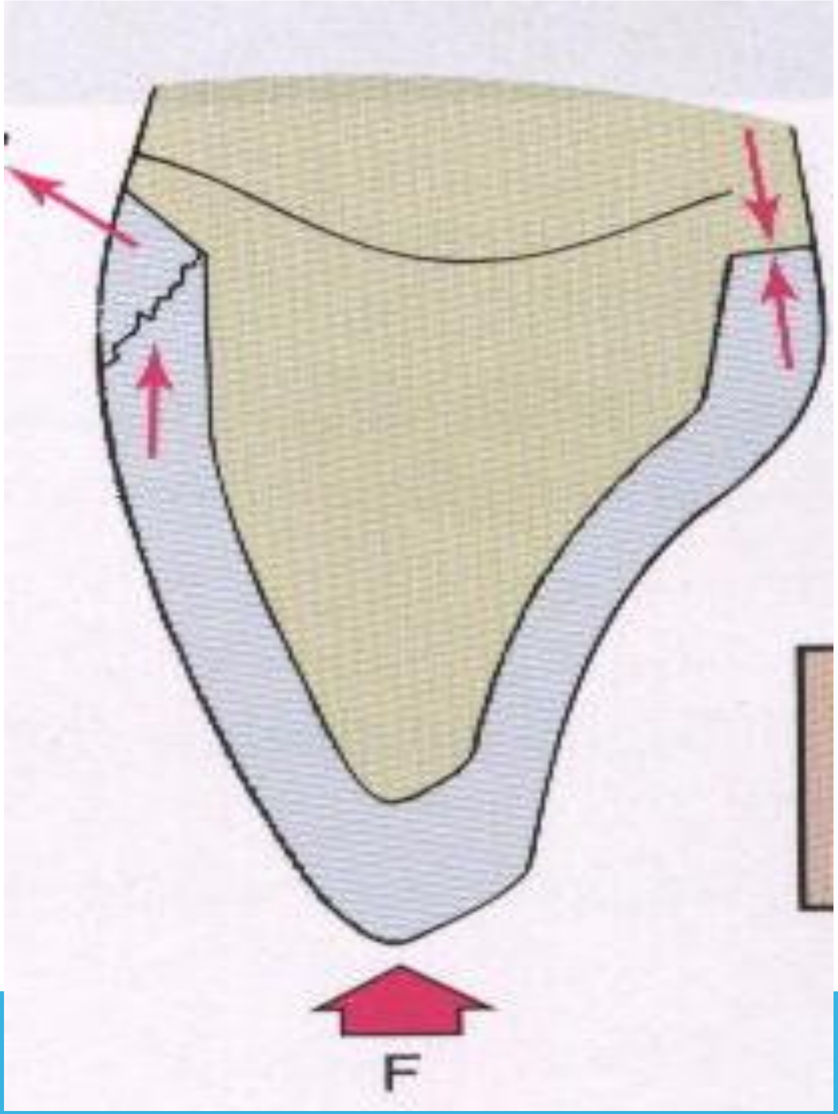
R.A. Lowe, D.D.S

3- Difficult to obtain well-fitting margin



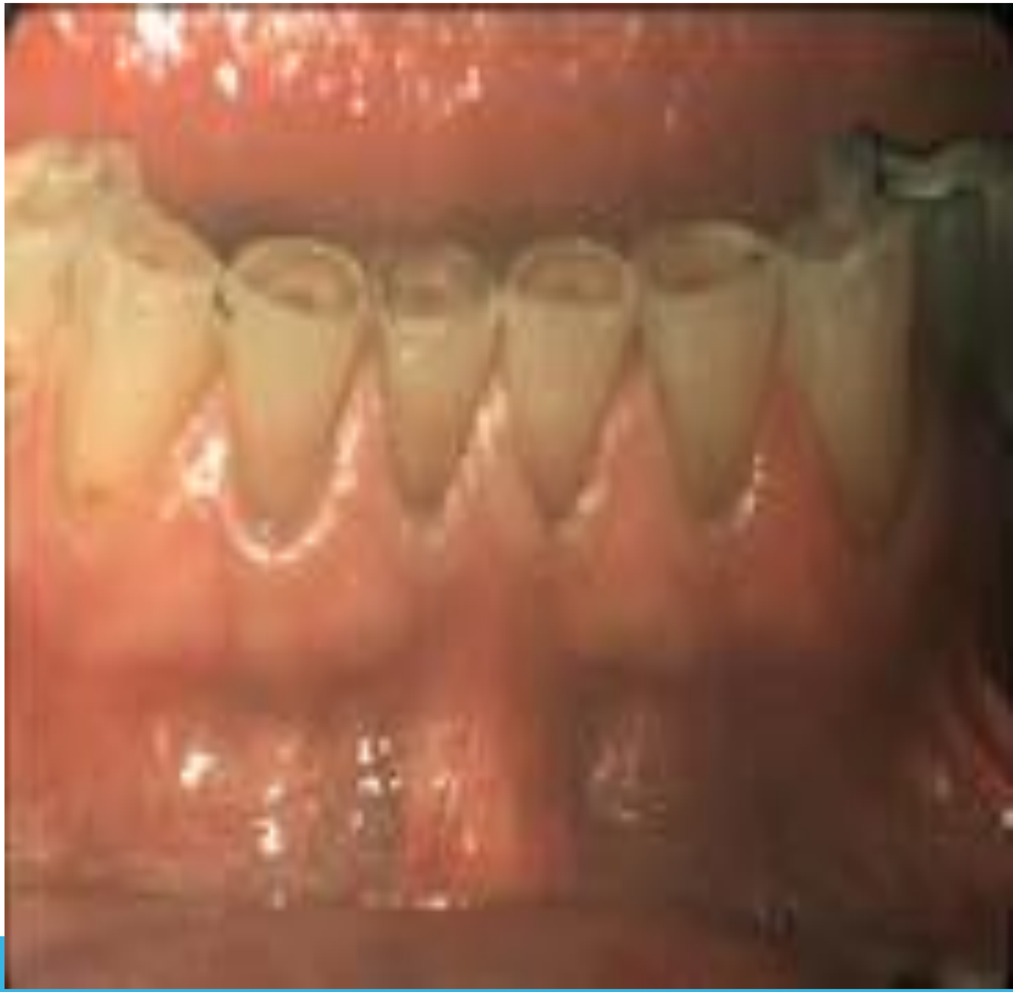
Improper fitted margin lead to recurrent caries

4. Proper preparation design is critical to ensuring mechanical success. 90 degree cavosurface angle is needed to prevent unfavorable distribution of stresses and to minimize the risk of fracture.



slopped shoulder
lead to fracture margin

5- Wear has been observed in the functional surface of the natural teeth that facing ceramic.



6. Expensive

7. The brittle nature of porcelain requires that connectors of large, cross-sectional dimension (a minimum of 4 x 4 mm is recommended) be incorporated in the FPD design.

INDICATIONS

1- It is indicated in areas with high esthetic requirements.

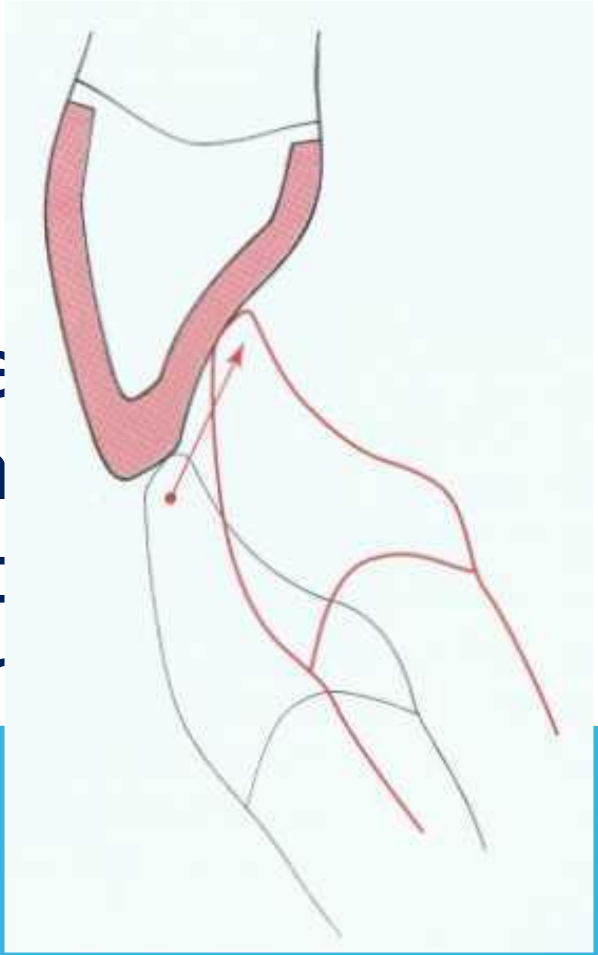
2-Malformed, malposed, or rotated tooth

3-Fractured anterior tooth , not involving more than one third of the inciso-gingival length

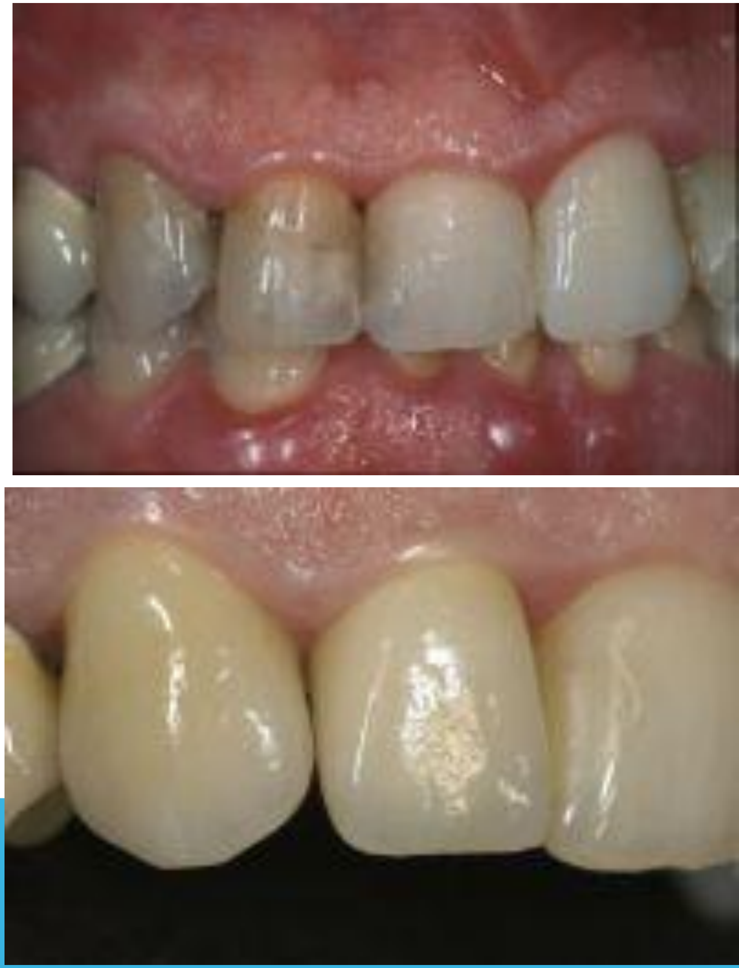
INDICATIONS

4- Favorable distribution of occlusal load,

generally this means that ce contact must be in an area wh the porcelain is supported by t structure (e.g., in the middle th of the lingual wall).



5-Discolored anterior teeth .



6- Some types of ceramic as In-Ceram zirconia and machinable ceramics can be used as a fixed dental prosthesis.

CONTRAINDICATIONS

1. When more conservative restorations can be used.

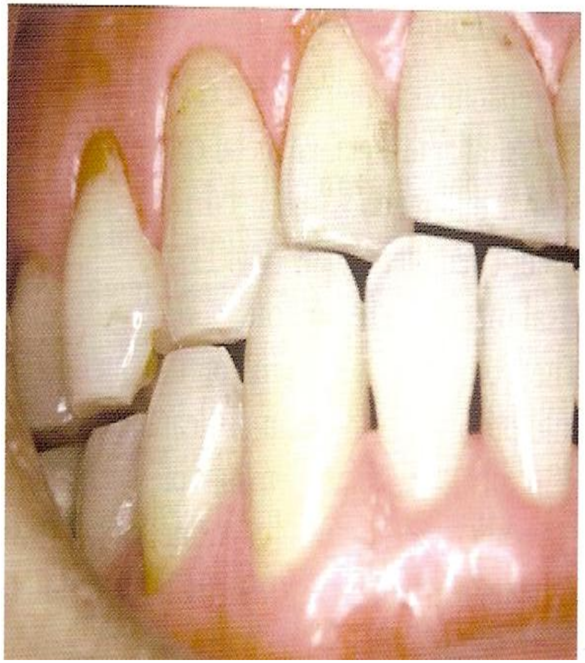
2. Patient with short clinical crowns.

3. In younger patient with large vital pulp.

4. Individuals engaged in contact sports or Vigorous occupations.

5. In cases of unfavorable distribution of occlusal load (deep bite or edge to edge).

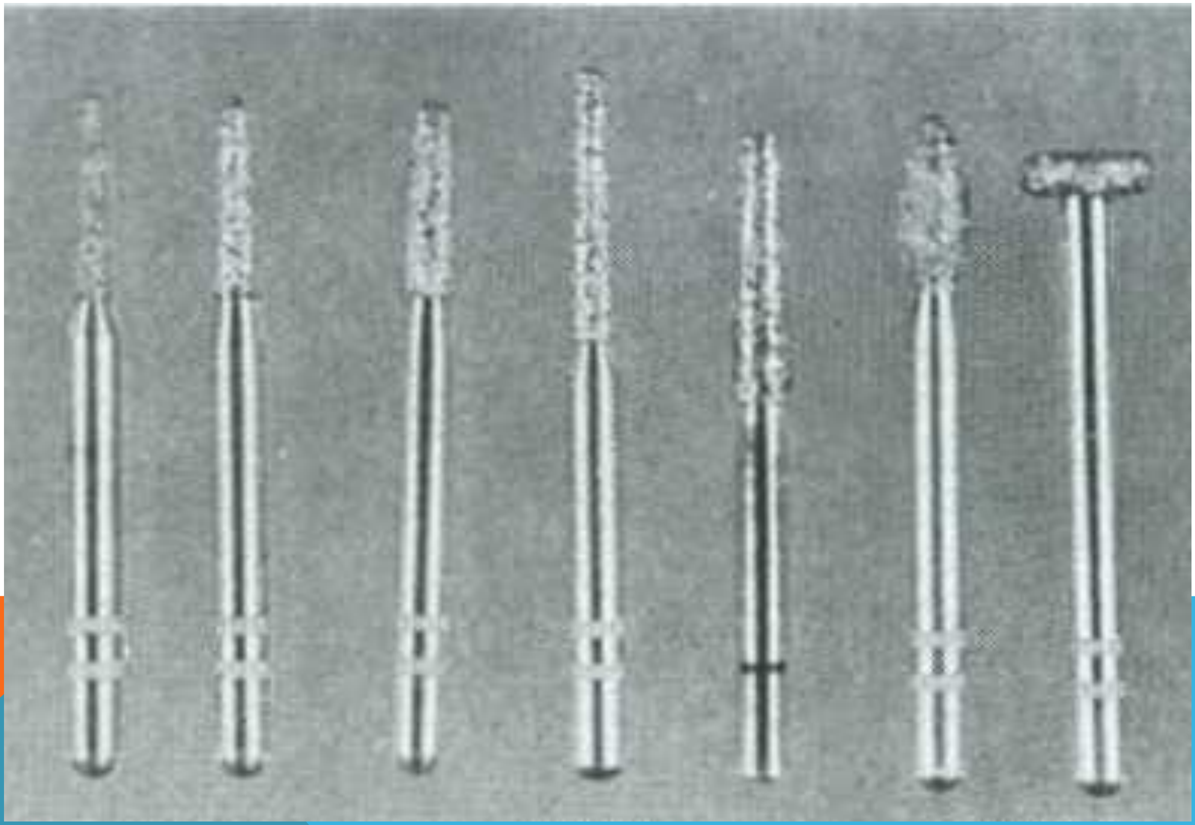
6. Patients with bad habits as bruxism or careless patients.



Edge to edge

PREPARATION

ARMAMENTARIUM



STEP-BY-STEP PROCEDURE

1- Incisal (occlusal) reduction.

2- Facial reduction.

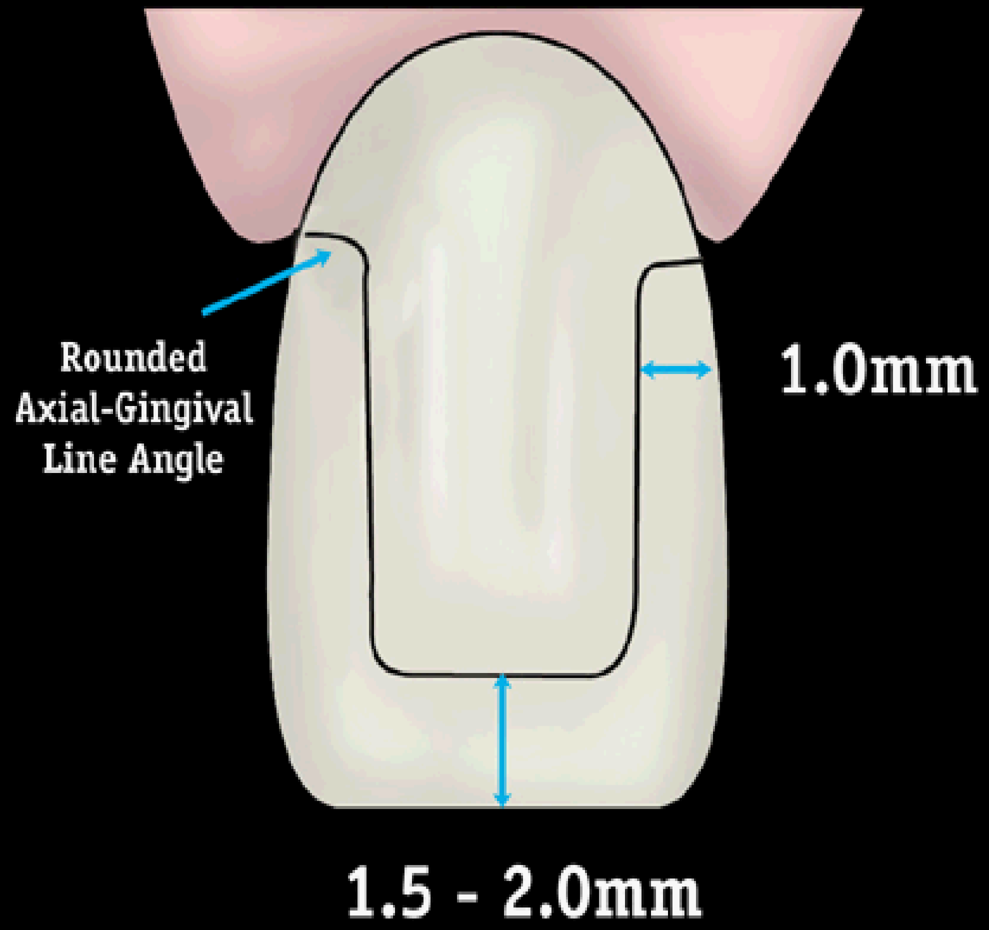
3- Axial reduction for lingual and proximal surface.

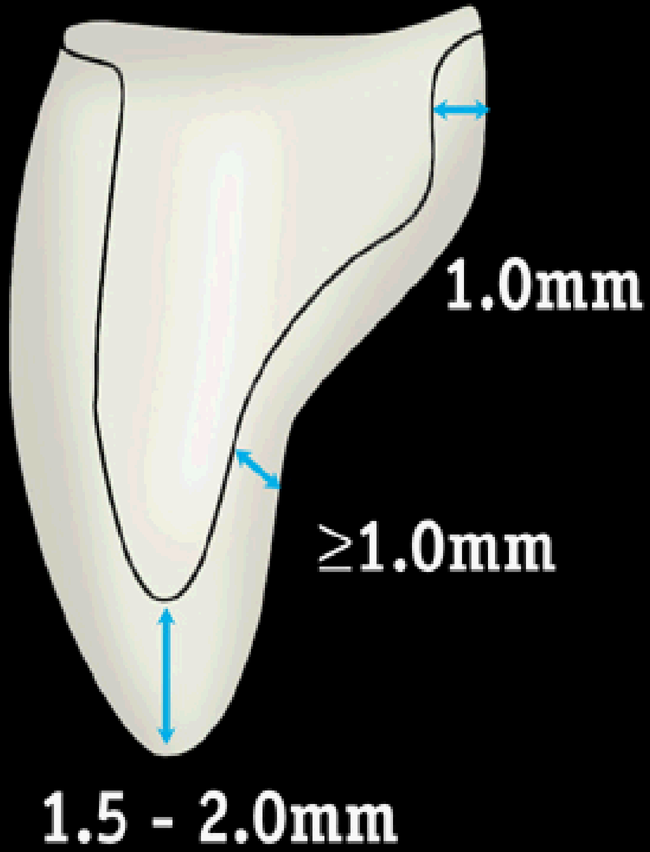
4- Finishing and evaluation

DESIGN SPECIFICATIONS

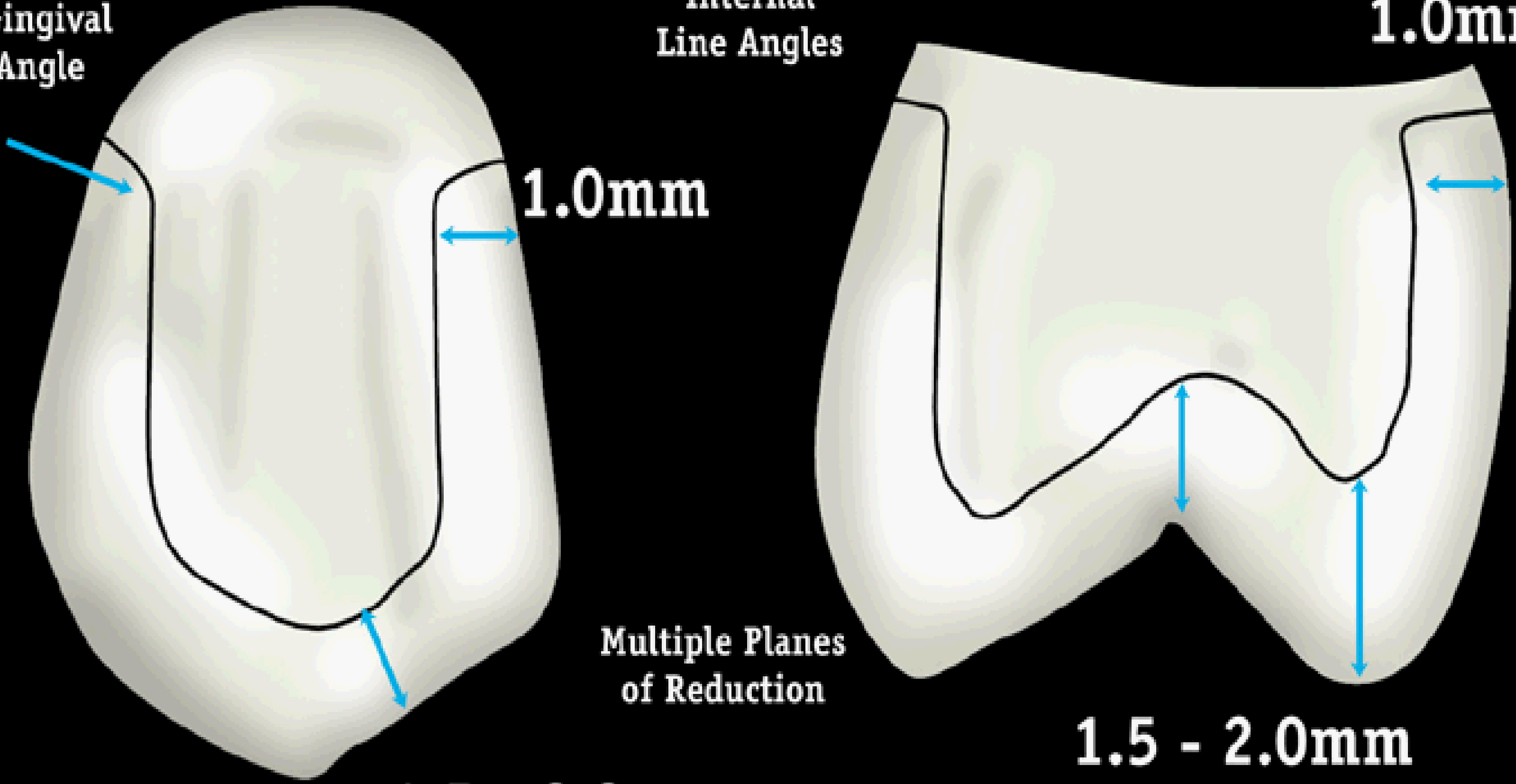
1.5 – 2.0 mm	Incisal reduction •
1.2 – 1.4 mm	Facial reduction •
1.0 – 1.3 mm	Lingual reduction •
1.0 – 1.2 mm	Marginal reduction •

Shoulder Margin Design





Shoulder Margin Design



Rounded Axial-Gingival Line Angle

1.0mm

1.5 - 2.0mm

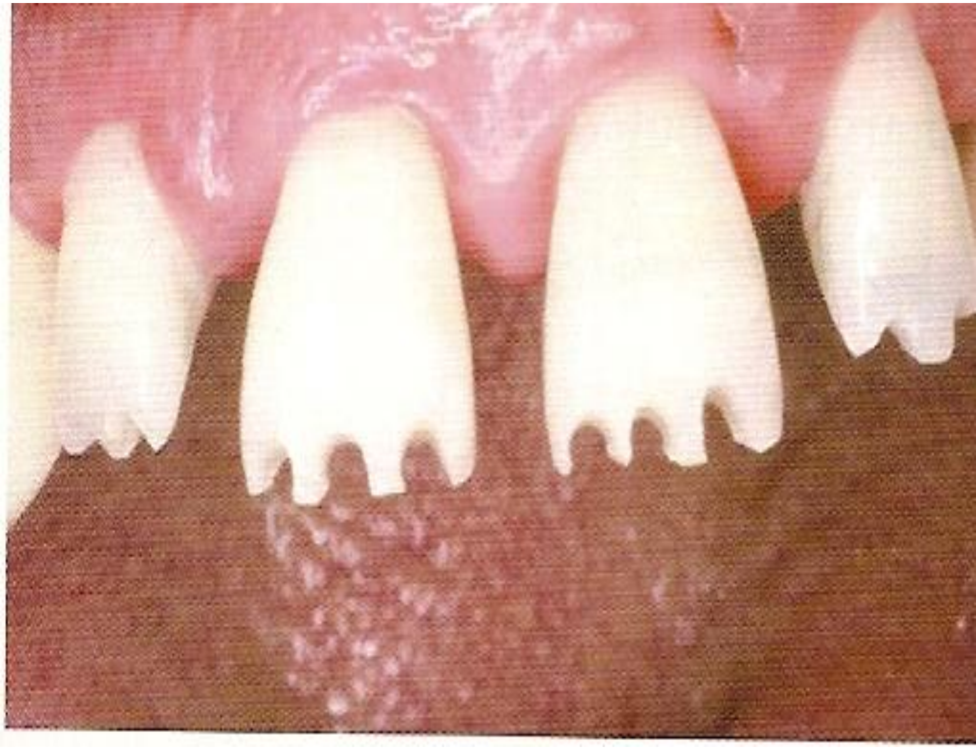
Rounded Internal Line Angles

1.0mm

Multiple Planes of Reduction

1.5 - 2.0mm

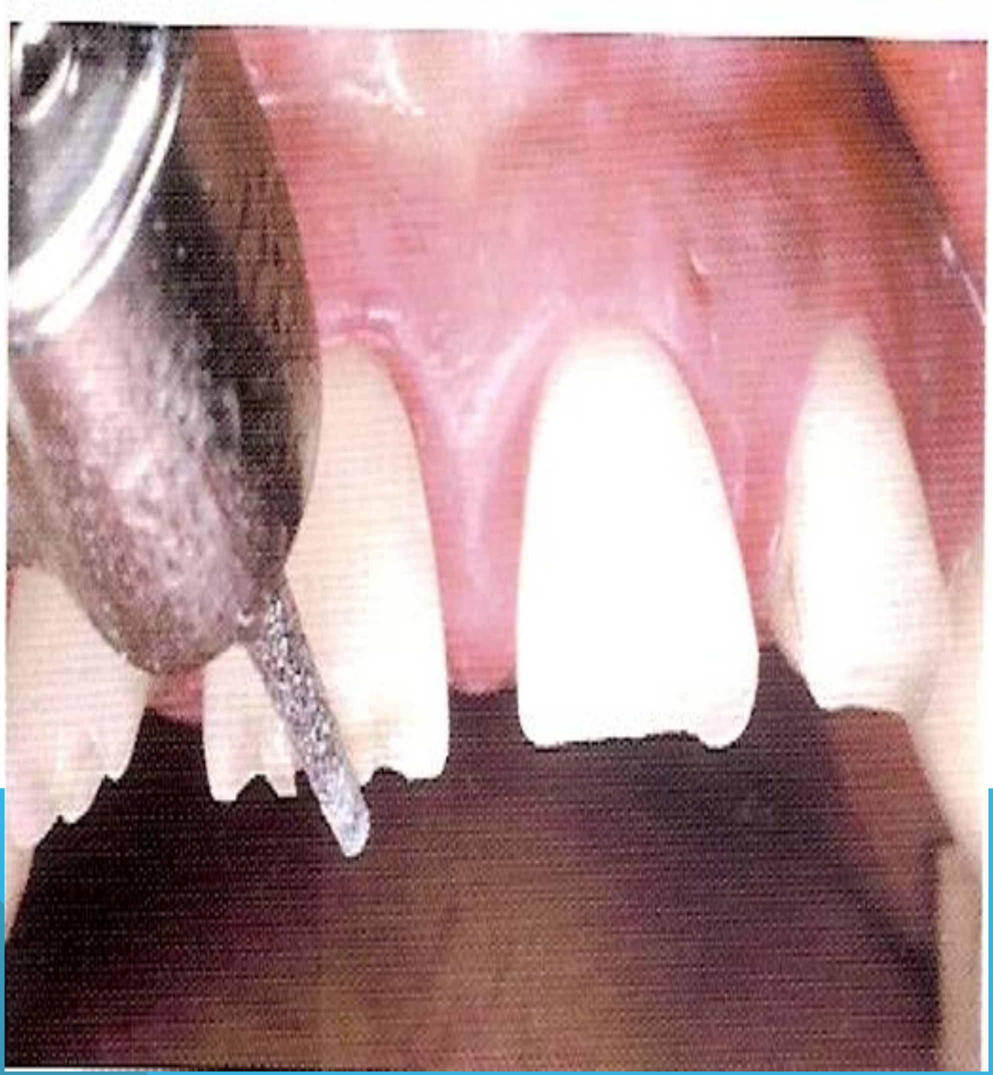
1- INCISAL REDUCTION



Place three depth grooves in the incisal edge,

(1.3 mm) which are perpendicular to the long axis of the opposing tooth.

1- INCISAL (OCCLUSAL) REDUCTION



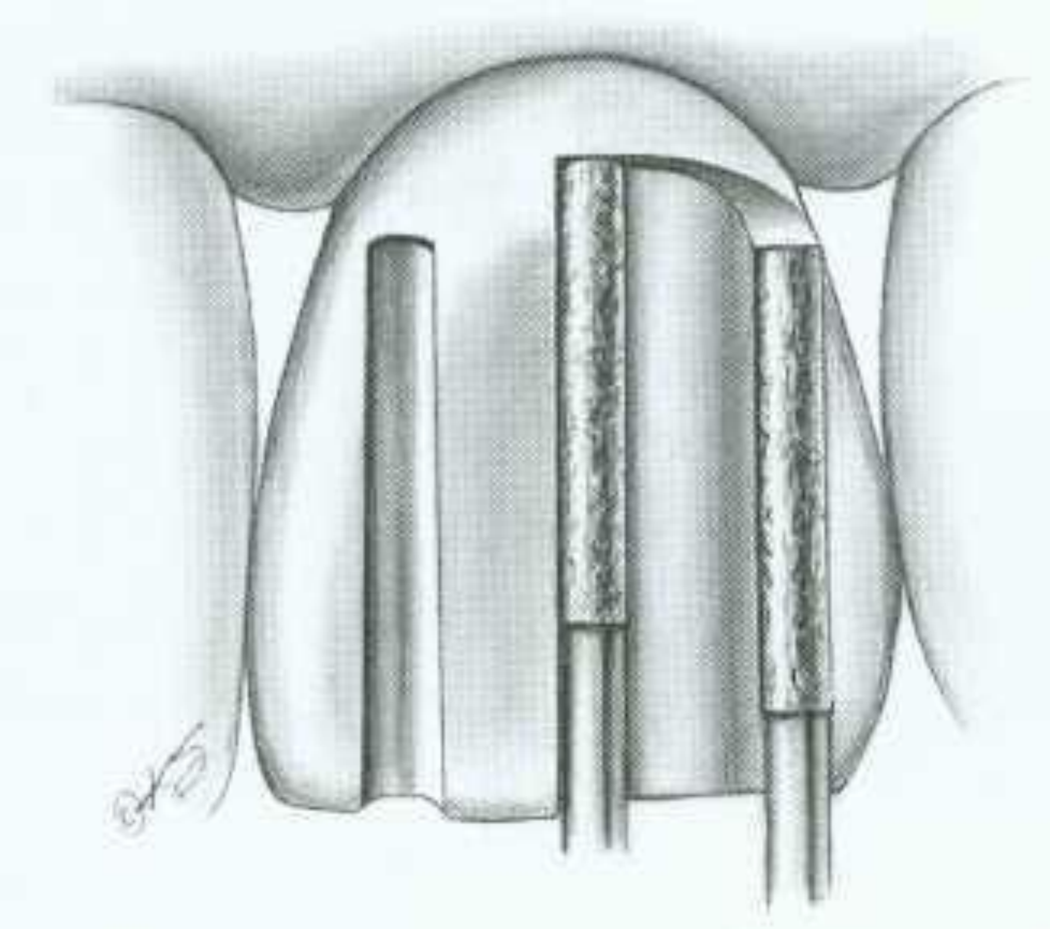
2- Facial reduction:

Amount of reduction : 1 to 1.5mm

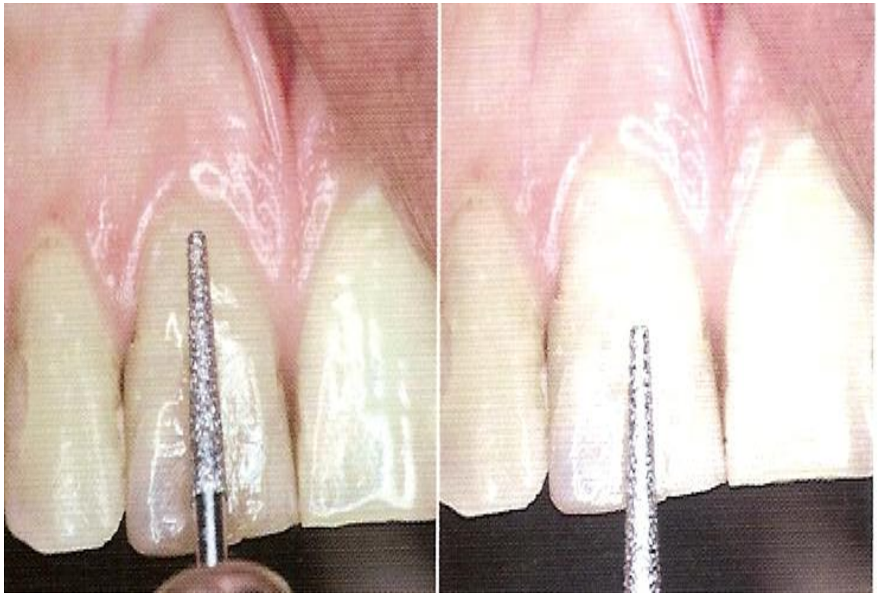
Instrument : Tapered, round tipped diamond.

Margin : Heavy chamfer margin with 1mm width.
Avoid any unsupported enamel.

2- FACIAL REDUCTION



2- FACIAL REDUCTION



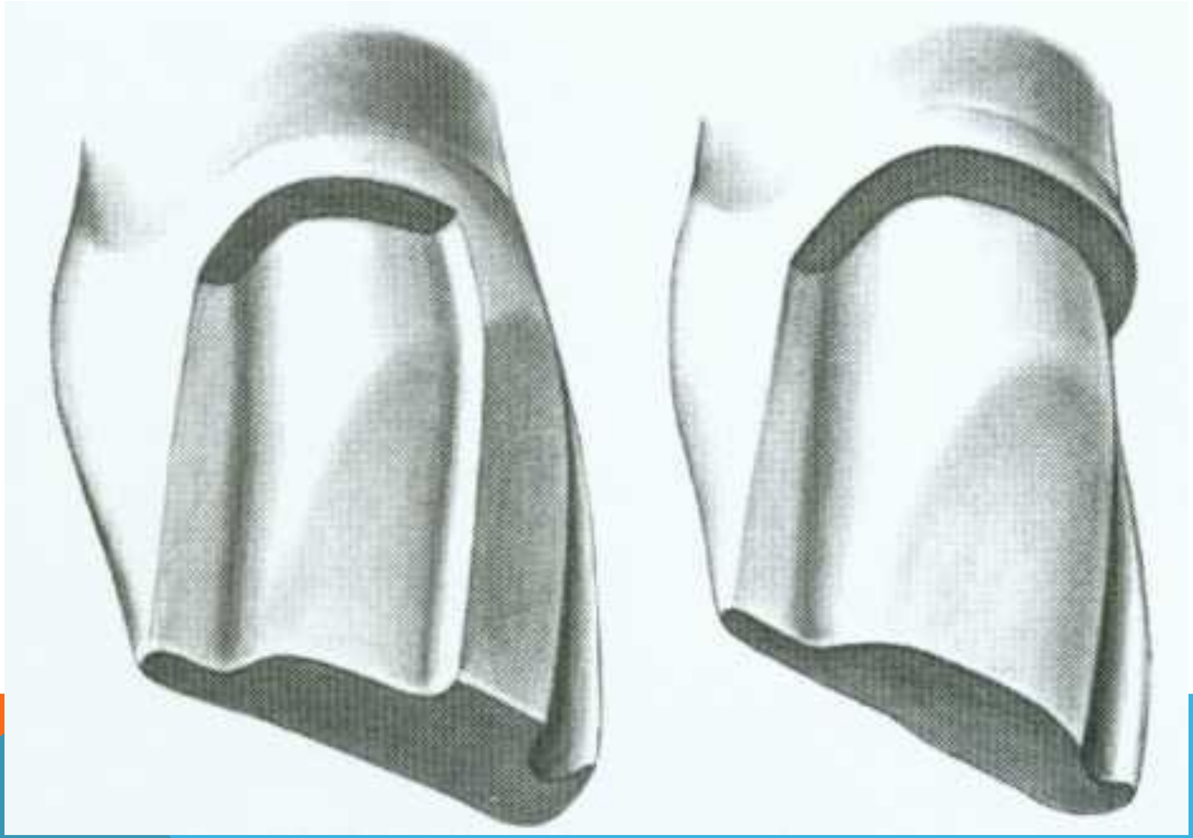
Guiding grooves placed in the two planes.

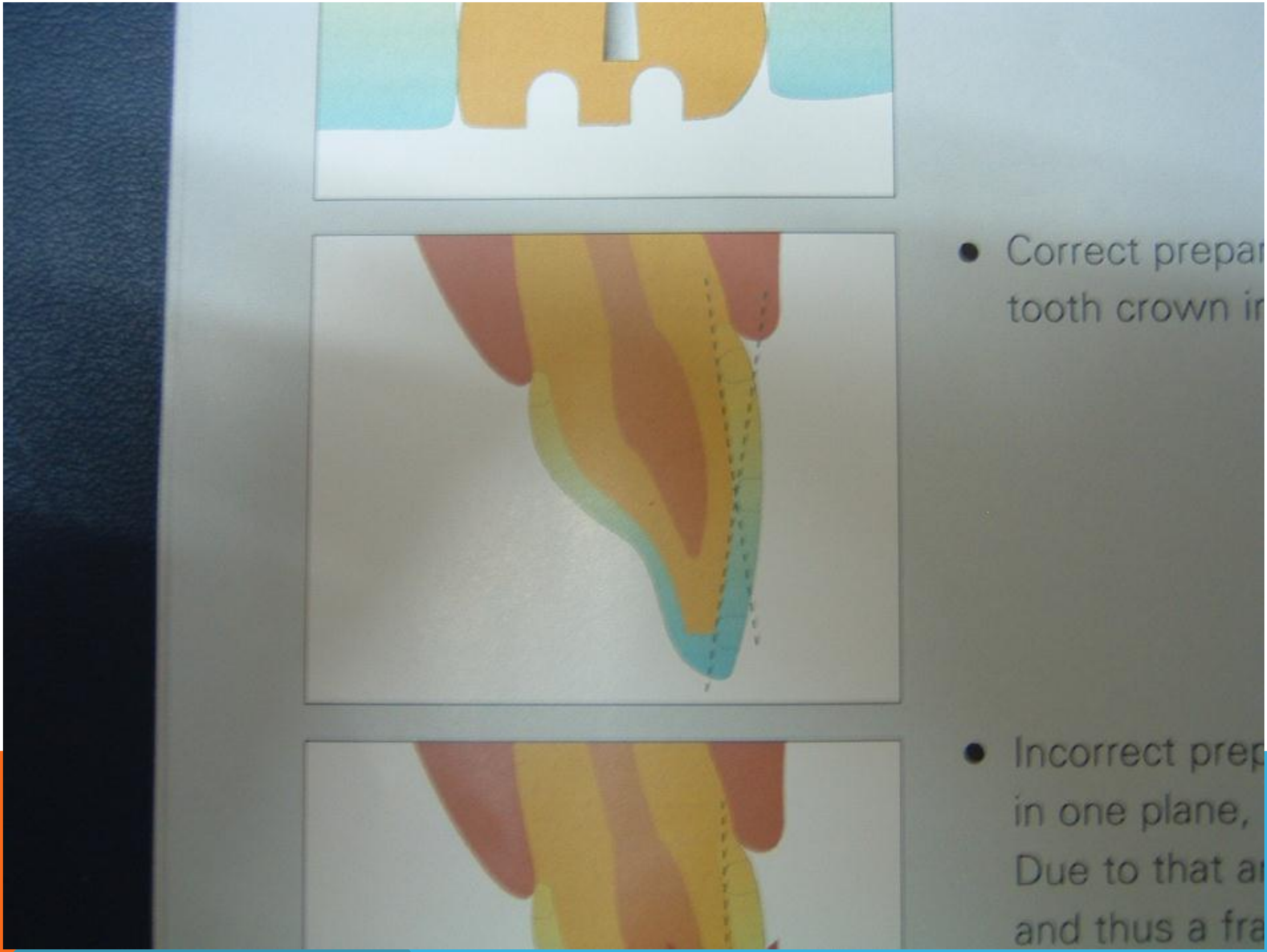
Cervically,

it is parallel to the path of withdrawal,

Incisally, it is prepared parallel to the facial contour of the tooth.

2- FACIAL REDUCTION



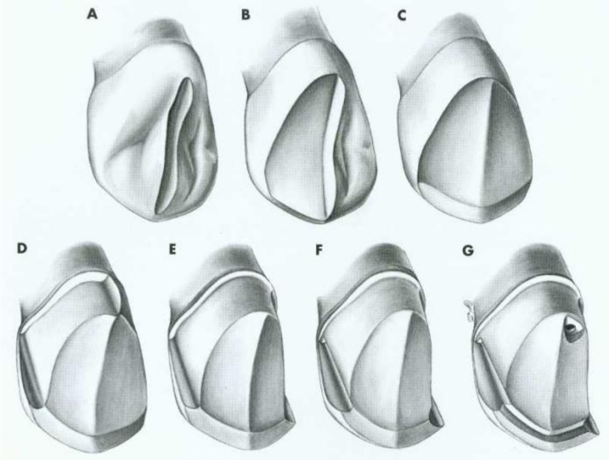


- Correct prepar
tooth crown i

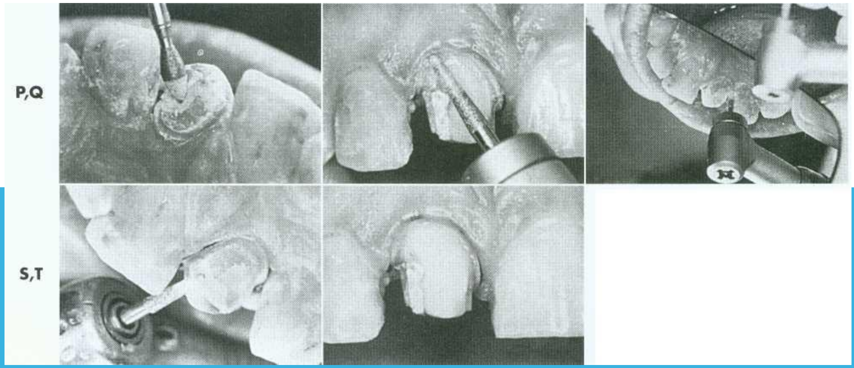
- Incorrect prep
in one plane,
Due to that a
and thus a fra

3- AXIAL REDUCTION FOR LINGUAL AND PROXIMAL SURFACE

The lingual
walls should converge
incisally.

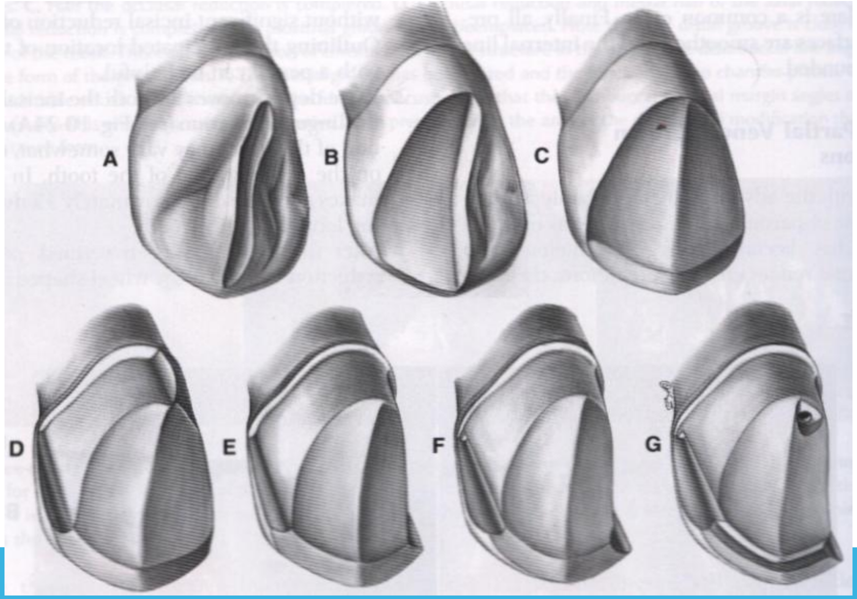


only one groove is
placed, in the center
of the lingual surface.

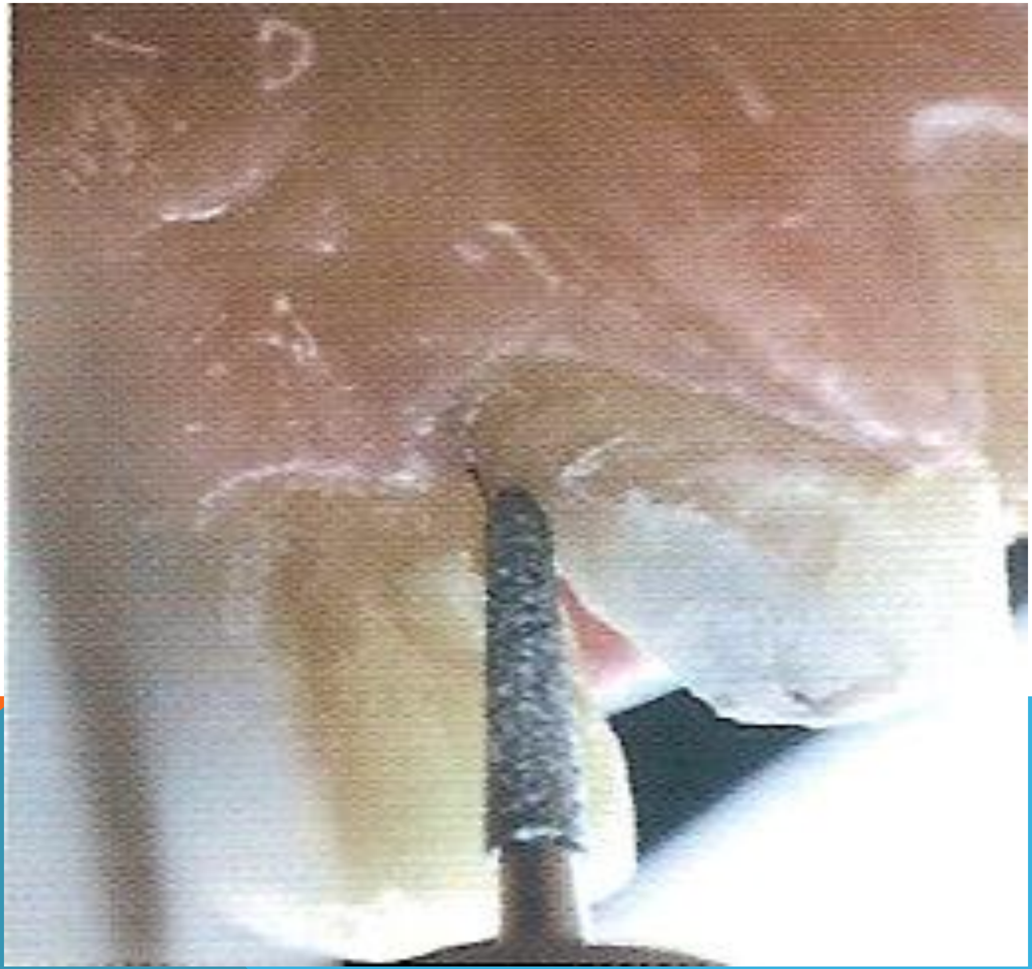


3- AXIAL REDUCTION FOR LINGUAL AND PROXIMAL SURFACE

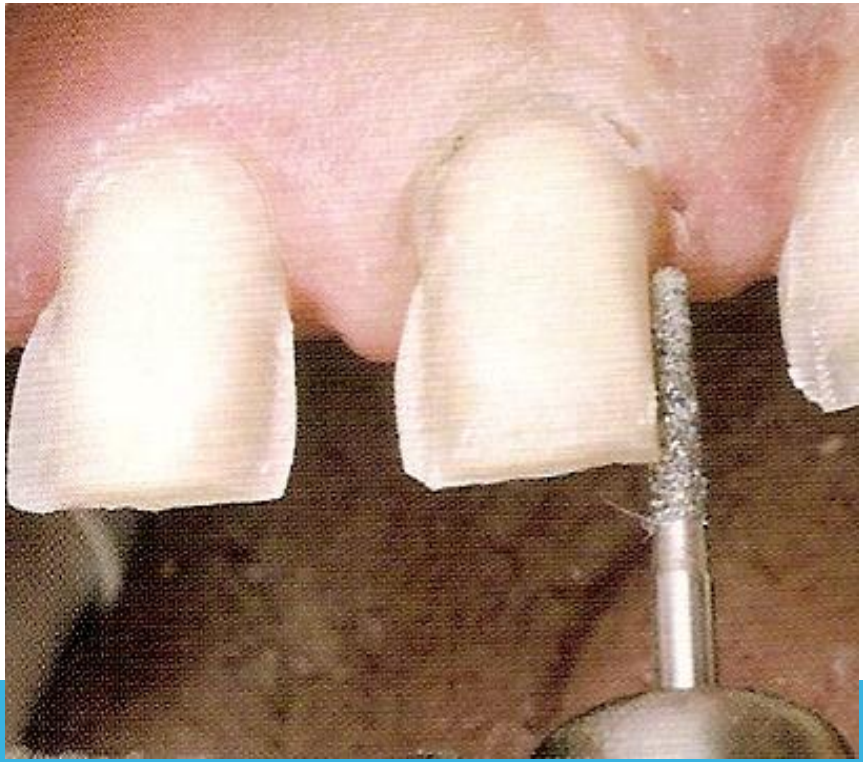
An alignment groove is placed in the centre of cingulum wall parallel to the cervical plane of the facial reduction l



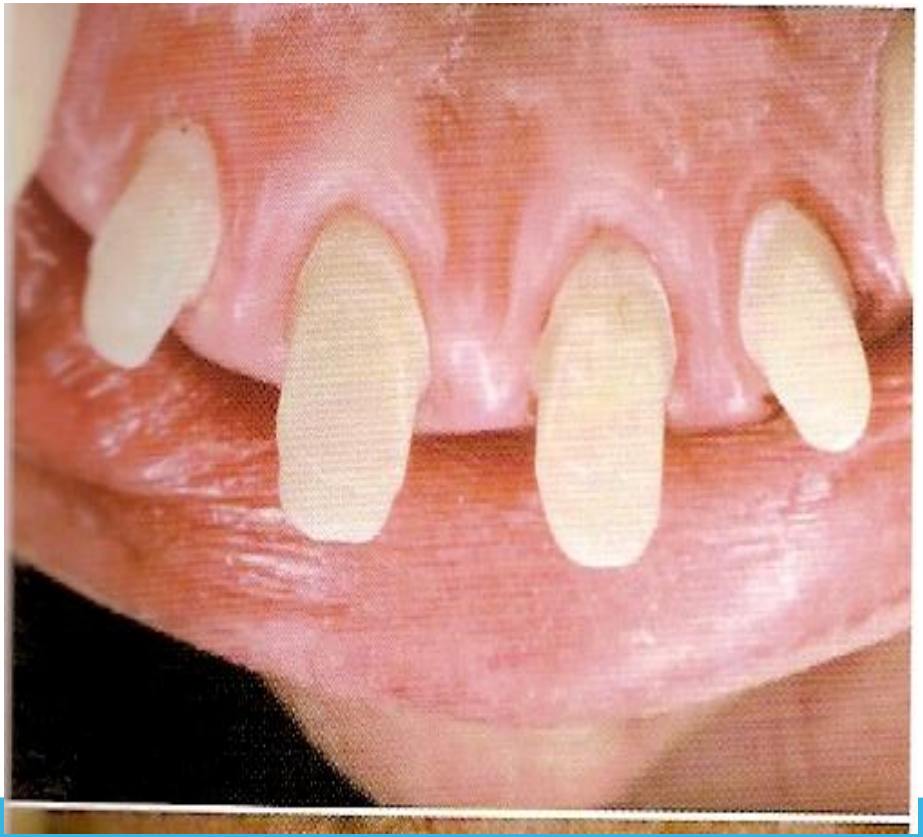
3- AXIAL REDUCTION FOR LINGUAL AND PROXIMAL SURFACE



3- AXIAL REDUCTION FOR LINGUAL AND PROXIMAL SURFACE



Proximal reduction with facial approach



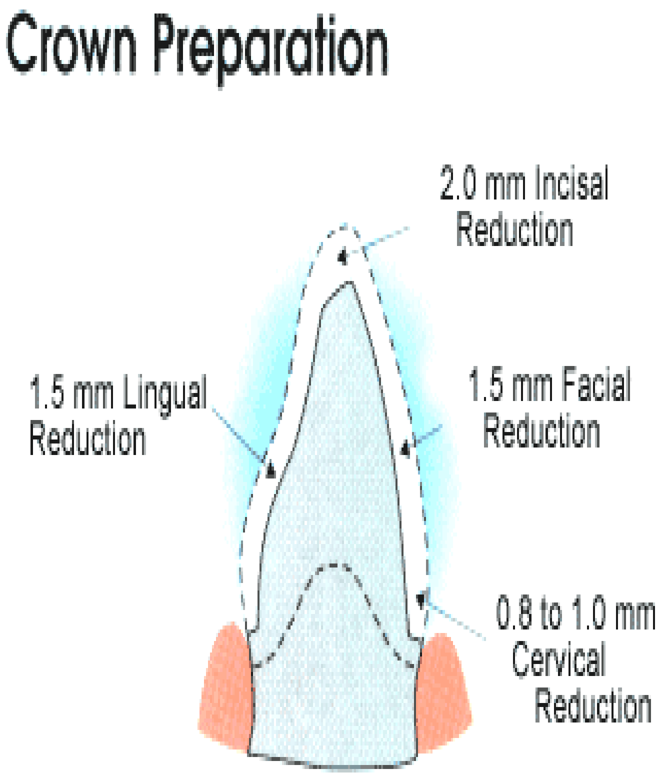
The completed lingual and proximal reduction

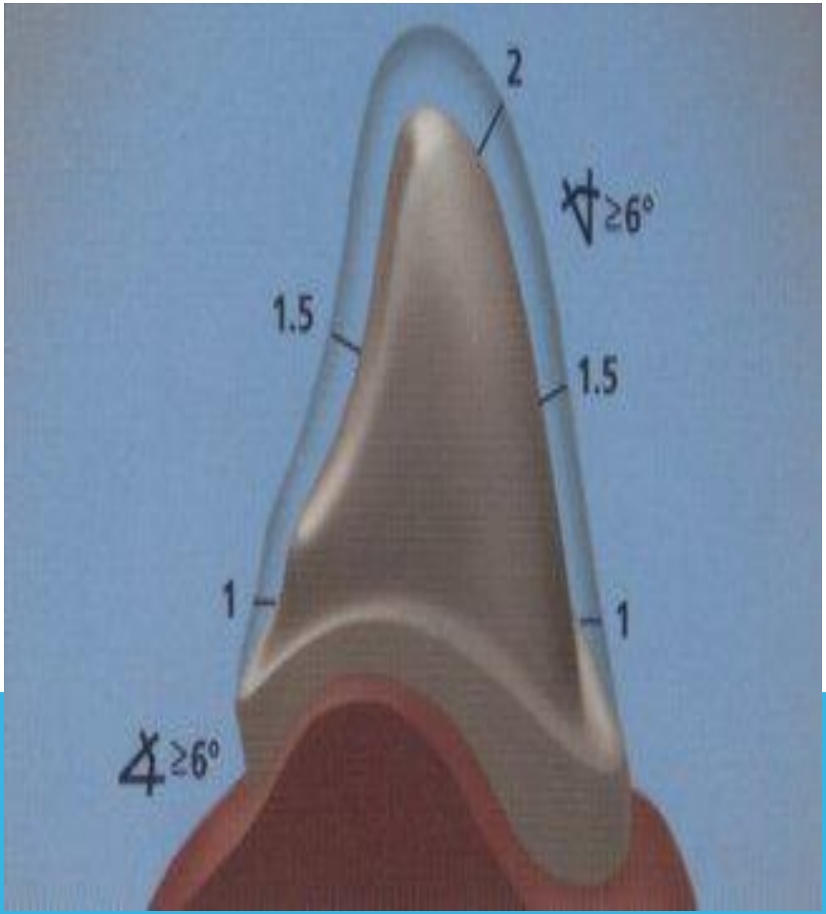
4.FINISHING

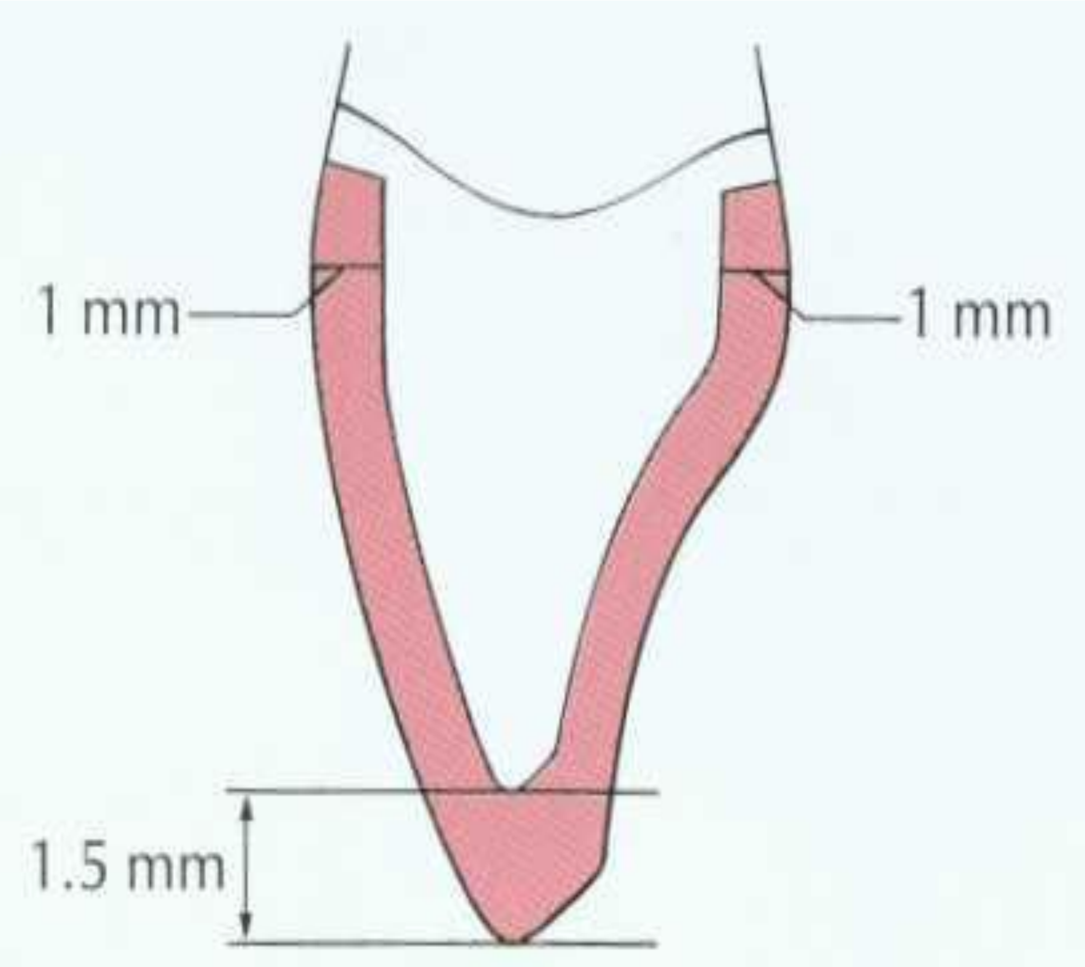
Round any remaining sharp line angles

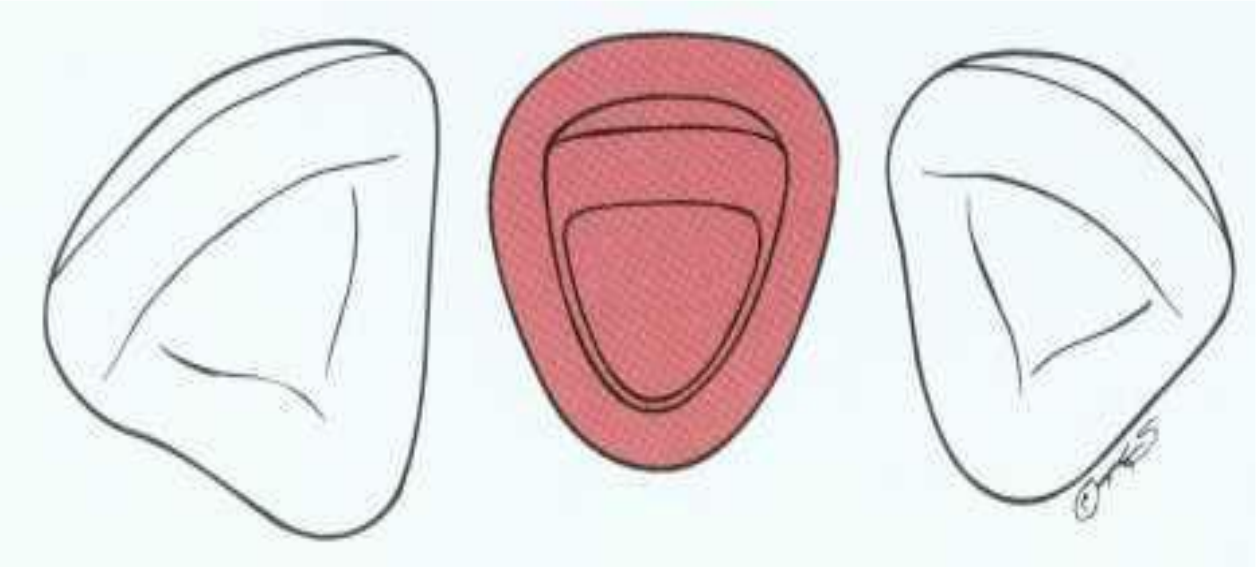
Perform any additional margin refinement as needed, using either the diamond or a carbide rotary instrument of choice.

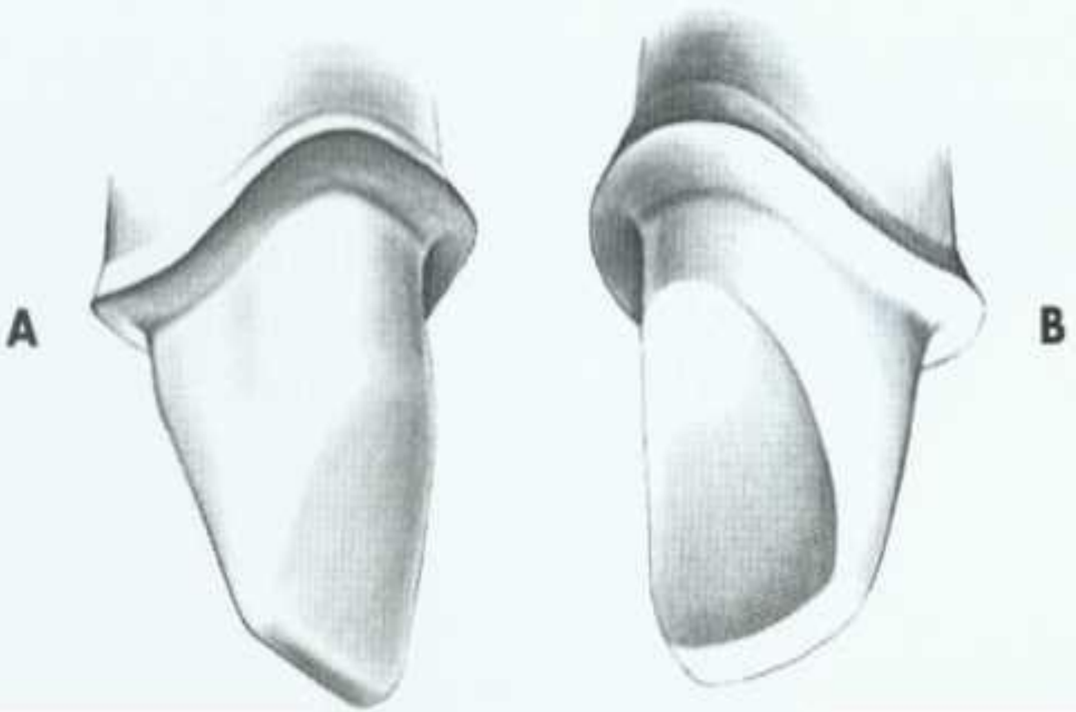
EVALUATION
ANTERIOR ALL-CERAMIC PREPARATION





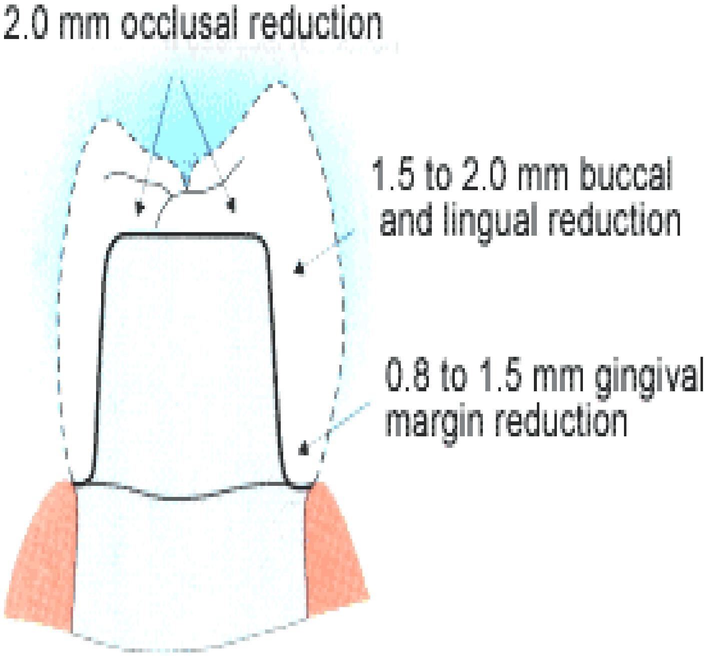

1 mm
1 mm
1.5 mm

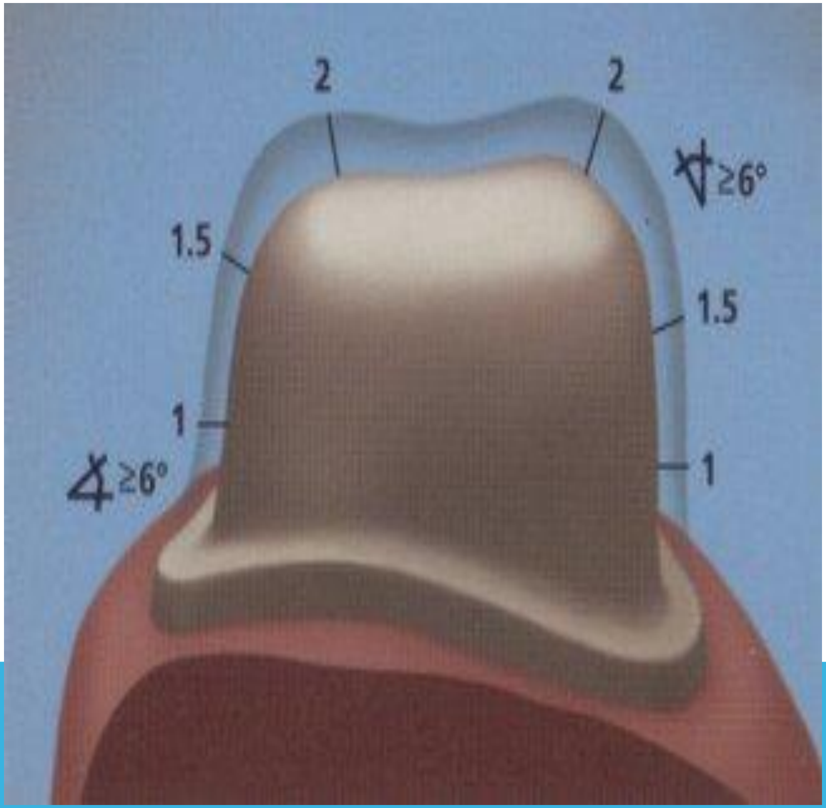




Note the rounded internal line angles.

POSTERIOR ALL-CERAMIC PREPARATION


2.0 mm occlusal reduction
1.5 to 2.0 mm buccal and lingual reduction
0.8 to 1.5 mm gingival margin reduction



THANK YOU